

REMARKS

Claims 1 – 3, 5 – 17, 19 – 34 and 36 – 39 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claim 28 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Strong et al. (U.S. Pat. No. 4,905,154). This rejection is respectfully traversed.

Claim 28, as amended herein, includes monitoring a cruise control mode of the vehicle, determining an error factor based on a particular cruise control mode and at least one of an acceleration error and a speed error, calculating a closed-loop speed compensation factor based on the error factor and determining a throttle area based on the closed-loop speed compensation factor. Strong fails to teach or suggest monitoring a cruise control mode of the vehicle, determining an error factor based on a particular cruise control mode and at least one of an acceleration error and a speed error, calculating a closed-loop speed compensation factor based on the error factor and determining a throttle area based on the closed-loop speed compensation factor.

The present invention provides a cruise control system for a vehicle that determines a throttle area and regulates a throttle based on the throttle area. The throttle area is determined at least partially based on a closed-loop speed compensation factor. The closed-loop speed compensation factor is determined based on a proportional term and an integral term. The integral term includes an error factor that is determined based at least one of a speed error and an acceleration error depending on

the particular cruise control mode. For example, in an engaged mode, the error factor is determined as a difference between a vehicle speed (S_{VEH}) and a set vehicle speed (S_{MEM}) (see Figure 5, steps 500 and 502). In an overspeed resume mode, the error factor is determined based on a snap-shot speed error ($S_{ERRSNAP}$) and an acceleration error (A_{ERROR}) (see Figure 5, steps 506 and 508).

Strong discloses a system that compensates for throttle cable length using electronic speed control. During engine speed control, the system monitors an acceleration error, which is determined as the difference between an actual acceleration and a desired acceleration (Col. 10, Lines 56 – 60). The system tracks speed error (i.e., the difference between the set speed and the actual speed) and the desired acceleration (e.g., either positive or negative) is determined based on the speed error (Col. 17, Lines 37 – 51 and steps 612, 620 and 634 of Figure 11). The system also tracks a summed acceleration error, which is based on the speed error and determines whether vehicle acceleration is needed to return to a set vehicle speed if the summed acceleration error exceeds a threshold (Col. 11, Lines 3 – 14).

Accordingly, Strong fails to teach or suggest monitoring a cruise control mode of the vehicle, determining an error factor based on a particular cruise control mode and at least one of an acceleration error and a speed error, calculating a closed-loop speed compensation factor based on the error factor and determining a throttle area based on the closed-loop speed compensation factor. Therefore, reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1, 3 – 5, 14, 16, 18 and 19 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Hashimoto et al. (U.S. Pat. No. 6,805,094). This rejection is respectfully traversed.

At the outset, Applicants note than claims 1 and 14, as amended herein, include monitoring a cruise control mode of the vehicle and calculating a closed-loop speed compensation factor based on a proportional term and an integral term, which is determined based on the cruise control mode. Hashimoto fails to teach or suggest monitoring a cruise control mode of the vehicle and calculating a closed-loop speed compensation factor based on a proportional term and an integral term, which is determined based on the cruise control mode.

As discussed in detail above, the present invention determines the closed-loop speed compensation factor based on a proportional term and an integral term. The integral term includes an error factor that is determined based at least one of a speed error and an acceleration error depending on the particular cruise control mode. For example, in an engaged mode, the error factor is determined as a difference between a vehicle speed (S_{VEH}) and a set vehicle speed (S_{MEM}) (see Figure 5, steps 500 and 502). In an overspeed resume mode, the error factor is determined based on a snap-shot speed error ($S_{ERRSNAP}$) and an acceleration error (A_{ERROR}) (see Figure 5, steps 506 and 508).

Hashimoto discloses an engine control apparatus that executes engine drive control and throttle control using a single CPU (see Abstract). The engine control apparatus includes a motor 103 that regulates a throttle opening based on an accelerator pedal position 210a and a throttle position 302, 303, and an engine drive

that includes a fuel injection solenoid valve 305 (Col. 3, Lines 31 – 48 and Figure 3). A first integrated circuit element 110 controls the throttle opening and the engine drive, and a second integrated circuit 120 communicates with the first integrated circuit to generate a driving output (Col. 3, Lines 43 – 51 and Figure 3).

Hashimoto fails to teach or suggest any sort of cruise control and, more specifically, fails to teach or suggest monitoring a cruise control mode of the vehicle and calculating a closed-loop speed compensation factor based on a proportional term and an integral term, which is determined based on the cruise control mode. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

Applicants note that claims 4 and 18 have been cancelled without prejudice or disclaimer of the subject-matter contained therein. Accordingly, the rejections thereof have been rendered moot.

With regard to claims 3, 5, 16 and 19, Applicants note that each of claims 3, 5, 16 and 19 ultimately depends from one of claims 1 and 14, which define over the prior art, as discussed in detail above. Therefore, each of claims 3, 5, 16 and 19 also define over the prior art for at least the reasons stated with respect to claims 1 and 14, and reconsideration and withdrawal of the rejections are respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 2, 6 – 8, 17 and 20 – 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hashimoto (U.S. Pat. No. 6,805,094) in view of Buckland et al. (U.S. Pat. No. 6,349,700). This rejection is respectfully traversed.

Each of claims 2, 6 – 8, 17 and 20 – 22 ultimately depends from one of claims 1 and 14, which define over the prior art, as discussed in detail above. Therefore, each of claims 2, 6 – 8, 17 and 20 – 22 also define over the prior art for at least the reasons stated with respect to claims 1 and 14, and reconsideration and withdrawal of the rejections are respectfully requested.

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hashimoto (U.S. Pat. No. 6,805,094) in view of Cullen et al. (U.S. Pat. No. 6,851,304). This rejection is respectfully traversed.

Claim 15 depends from claim 14, which defines over the prior art, as discussed in detail above. Therefore, claim 15 also defines over the prior art for at least the reasons stated with respect to claim 14, and reconsideration and withdrawal of the rejection are respectfully requested.

Claims 29, 32 and 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Strong et al. (U.S. Pat. No. 4,905,154) in view of Hashimoto (U.S. Pat. No. 6,805,094). This rejection is respectfully traversed.

Each of claims 29, 32 and 33 ultimately depends from claim 28, which defines over the prior art, as discussed in detail above. Therefore, each of claims 29, 32 and 33 also define over the prior art for at least the reasons stated with respect to claim 28, and reconsideration and withdrawal of the rejections are respectfully requested.

Claims 31, 34 and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Strong et al. (U.S. Pat. No. 4,905,154) in view of Buckland et al. (U.S. Pat. No. 6,349,700). This rejection is respectfully traversed.

Applicants note that claim 35 has been cancelled without prejudice or disclaimer of the subject-matter contained therein. Accordingly, the rejection of claim 35 has been rendered moot.

Each of claims 31 and 34 ultimately depends from claim 28, which defines over the prior art, as discussed in detail above. Therefore, each of claims 31 and 34 also define over the prior art for at least the reasons stated with respect to claim 28, and reconsideration and withdrawal of the rejections are respectfully requested.

Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Strong et al. (U.S. Pat. No. 4,905,154) in view of Cullen et al. (U.S. Pat. No. 6,851,304). This rejection is respectfully traversed.

Claim 30 depends from claim 28, which defines over the prior art, as discussed in detail above. Therefore, claim 30 also defines over the prior art for at least the reasons stated with respect to claim 28, and reconsideration and withdrawal of the rejection are respectfully requested.

OTHER CLAIM AMENDMENTS

Claims 5, 19, 33 and 36 – 38 have been amended to conform to amended claims 1, 14 and 28 and in view of cancelled claims 4, 18 and 35. No new matter has been entered.

ALLOWABLE SUBJECT MATTER

The Examiner states that claims 9 – 13, 23 – 27 and 36 – 39 would be allowable if rewritten in independent form. Applicants thank the Examiner for recognizing the

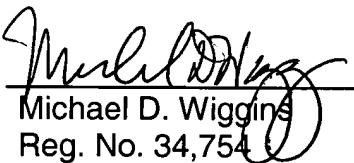
allowable subject-matter of claims 9 – 13, 23 – 27 and 36 – 39. Although Applicants have presently refrained from amending any of claims 9 – 13, 23 – 27 and 36 – 39 in independent form, in view of the discussion herein, Applicants reserve the right to make such amendments at a later date.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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